REMARKS

Claims 1-92 are pending in this application. All claims were rejected under 35 U.S.C. § 102(e) as being anticipated by Siu. Claims 34, 35 and 38 are currently amended. Claim 64 is cancelled. Reconsideration and further examination is respectfully requested.

The technique taught by Siu differs fundamentally from the presently claimed invention. The "basic scheme" of Siu maintains the effective queue size to be close to, but smaller than, the predetermined queue threshold. Col. 13, lines 50-53. As indicated by the code at col. 13, lines 45-50, acks are controlled based upon the estimates of the effective queue size in order to avoid dropping packets. If the threshold is exceeded, no acks are transmitted. In order to operate in the described manner, the Siu technique requires a relatively accurate or conservative estimate of effective queue size. Much of the sections cited by the Office, including columns 13-21, is devoted to describing different techniques for estimating effective queue size. In contrast, the present invention is associated with controlling packet drop probability based on average queue size. Hence, in an overload condition the present invention increases the drop probability rather than ceasing transmission of acks entirely.

The distinguishing features discussed above are recited in the claims. For example, claim 1 distinguishes Siu by reciting determining a point of operation as the intersection of the queue law function and a control function. Even assuming that the "Basic Scheme" of Siu could be described as a control function, it differs because it exerts control based on current traffic conditions and a threshold rather than a queue function. The Office asserts that this limitation is taught somewhere in the Summary of Sui. However, Applicant is unable to find either a teaching

of a queue function or a teaching of determining the control function based on the queue function. Claim 5 recites an analogous limitations.

Claim 14 distinguishes Siu by reciting "calculating the average queue size function dependent on a data drop probability based upon the link utilization, the buffer size, and the average round trip transmission time." As already discussed, the Siu technique requires a sufficiently accurate or conservative estimate of effective queue size in order to operate in the described manner. The sections of Siu cited by the Office largely describe different techniques for estimating effective queue size, rather than average queue size. Further, Siu fails to utilize the average queue size in the claimed manner. Claim 18 recites analogous limitations.

Claim 19 distinguishes Siu by reciting "defining the control function as being bounded by the maximum value and crossing the maximum average queue size function." As already discussed, Siu fails to utilize average queue size in the claimed manner, and also fails to teach use of a queue function to determine a control function.

Claim 25 distinguishes Siu by reciting "receiving input parameters including ... an average weight." As already discussed, Siu utilizes effective queue size to control whether acks are transmitted. Siu fails to teach use of an average weight.

Claim 27 distinguishes Siu by reciting "selecting a buffer size that is larger than the average queue size at the intersection point." Siu fails to teach selecting buffer size, particularly based on average queue size at the intersection point of two functions. Indeed, Siu does not appear to utilize an intersection point of a queue law function and a control function at all.

Claim 28 distinguishes Siu by reciting "calculating a maximum queue law function based on traffic conditions for the network." As already discussed, the Siu technique utilizes an estimate of effective queue size rather than a queue law calculated based on predetermined traffic

conditions. The queue law is a predetermined calculation for a range of conditions, whereas the effective queue size calculation is a real-time estimate of the actual condition.

Claim 30 distinguishes Siu by reciting "determining a maximum average queue size for expected operating conditions based upon the selected queue management policy." Siu fails to teach determining maximum average queue size in general, and particularly based on a selected queue management policy.

Claim 36 distinguishes Siu by reciting "evaluating a maximum queue law function using the maximum drop probability to determine qmax, the minimum buffer size." Siu does not appear to utilize a queue law function, and further fails to utilize drop probability. Rather, Siu aims to avoid dropped packets by controlling transmission of acks based on a threshold and estimated effective queue size.

Claim 37 distinguishes Siu by reciting "evaluating the weight based upon the sample value, the sampling period and the total time value." As discussed above, Siu fails to teach use of the weight.

Claim 39 distinguishes Siu by reciting "when the maximum queue law function is placed on a graph having drop rate percentage and average queue size for axes, selecting a point outside of the maximum queue law." As discussed above, Siu does not utilize a drop rate percentage to control traffic, nor selection of an endpoint for the control function based on a queue law.

Claim 40 distinguishes Siu by reciting "using a queue estimator in conjunction with each periodically sampled queue size to determine an average queue size." Again, average queue size differs from the estimate of effective queue size utilized by Siu. The average queue size estimate for a queue law can be calculated in advance for a range of operation, whereas the effective queue size estimate is an indication of current operating conditions.

Claim 42 distinguishes Siu by reciting "calculating the weight based upon the sampling interval and the total time interval." As stated above, Siu fails to utilize the claimed weight, and hence also fails to teach calculation of the weight.

Claim 43 distinguishes Siu by reciting "a control function module for determining the control function based upon the queue function." As stated above, the "basic scheme" of Siu controls ack transmission based on estimated effective queue size and a threshold, rather than a queue function.

Claim 44 distinguishes Siu by reciting "a processor for determining a point of operation for the node as the intersection of the queue law function and a predetermined control function for the node." As stated above, Siu does not calculate or utilize a queue law function.

Claim 54 distinguishes Siu by reciting "outputting control function configuration parameters based upon a maximum average queue size function." As stated above, Siu does not calculate or utilize a queue law function.

Claim 57 distinguishes Siu by reciting "apparatus for determining a weight for estimating an average queue size." As stated above, Siu fails to utilize the claimed weight, and hence also fails to teach calculation of the weight.

Claim 58 distinguishes Siu by reciting "an input selector allowing for selection of the minimum buffer size so that the minimum buffer size is larger than the average queue size at the intersection point." Siu does not teach either selection of minimum buffer size or utilization of average queue size in the claimed manner.

Claim 59 distinguishes Siu by reciting "a processor for periodically updating the average queue size based upon a point of intersection of a maximum queue law function and a control function of the congestion control module." As stated above, the "basic scheme" of Siu controls

ack transmission based on estimated effective queue size and a threshold, rather than a queue function.

Claim 61 distinguishes Siu by reciting "computer code for determining the control function based upon the queue function." As stated above, the "basic scheme" of Siu controls ack transmission based on estimated effective queue size and a threshold, rather than a queue function.

Claim 62 distinguishes Siu by reciting "computer code for determining a point of operation for the node as the intersection of the queue law function and a predetermined control function for the node." As stated above, the "basic scheme" of Siu controls ack transmission based on estimated effective queue size and a threshold, rather than a queue function.

Claim 74 distinguishes Siu by reciting "computer code for calculating the average queue size function dependent on a data drop probability based upon the link utilization, the buffer size, and the average round trip transmission time." Again, average queue size differs from the estimate of effective queue size utilized by Siu. The average queue size estimate for a queue law can be calculated in advance for a range of operation, whereas the effective queue size estimate is an indication of current operating conditions.

Claim 78 distinguishes Siu by reciting "computer code for determining the average queue size at the intersection point of a node congestion control function and a queue law function if there is full link utilization, wherein the queue law function is based' in part on the round trip transmission time." Again, average queue size differs from the estimate of effective queue size utilized by Siu. The average queue size estimate for a queue law can be calculated in advance for a range of operation, whereas the effective queue size estimate is an indication of current operating conditions.

Claim 79 distinguishes Siu by reciting "computer code for defining the control function as being bounded by the maximum value and crossing the maximum average queue size function." As stated above, the "basic scheme" of Siu controls ack transmission based on estimated effective queue size and a threshold, rather than a queue function.

Claim 85 distinguishes Siu by reciting "computer code for calculating values including a buffer size for an input to the link, a queue sampling interval, and an average weight." As stated above, Siu fails to utilize the claimed weight, and hence also fails to teach calculation of the weight.

Claim 87 distinguishes Siu by reciting "computer code for determining an equilibrium point where the control function and the queue law intersect." As stated above, the "basic scheme" of Siu controls ack transmission based on estimated effective queue size and a threshold, rather than a queue function.

Claim 88 distinguishes Siu by reciting "computer code for designating a maximum boundary for expected operating conditions of the queue control function to be outside of the maximum queue law function." As stated above, the "basic scheme" of Siu controls ack transmission based on estimated effective queue size and a threshold, rather than a queue law function.

Claim 90 distinguishes Siu by reciting "computer code for determining a maximum average queue size for expected operating conditions based upon the selected queue management policy." Again, average queue size differs from the estimate of effective queue size utilized by Siu. The average queue size estimate for a queue law can be calculated in advance for a range of operation, whereas the effective queue size estimate is an indication of current operating conditions.

For the reasons stated above, Applicant respectfully requests that the rejections of claims 1, 5, 14, 18, 19, 25, 27, 28, 30, 36, 37, 39, 40, 42, 43, 44, 54, 57, 58, 59, 61, 62, 74, 78, 79, 85, 87, 88 and 90 be withdrawn. The claims which are dependent on the above claims further distinguish the invention and are allowable for the same reasons set forth with regard to their respective base claims. Withdrawal of the rejections of those dependent claims is therefore also respectfully requested.

The Office also rejected and objected to certain claims based on informalities. Those informalities have been corrected, or the claims cancelled. Hence, withdrawal of those rejections is requested. Formal drawings are also submitted with this response in accordance with the requirement stated in the office action.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone the undersigned, Applicants' Attorney at 978-264-4001 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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